Mechanical Excitation of the Optic Nerve.

It is commonly believed that, like most other nerves, the optic is sensitive to mechanical stimulation, that thus sensations of light may be excited, just as they are by a similar stimulation of the retinal elements. The question has been recently re-examined by Schmidt-Rimpler, who comes to the conclusion that the current opinion is true, although the grounds on which it is based are not altogether correct. It is usually asserted that division of the nerve in enucleation of the eyeball causes a sensation of light. The fact is, however, doubtful. Rothmund, of Munich, has several times extirpated an eyeball without anæsthetics, and has never known the division of the nerve to cause a sensation of light. It is probable, however, that in many such cases the fibres of the nerve are totally degenerated. A more conclusive instance has been met with by Schmidt-Rimpler. A large part of the contents of one orbit had to be removed on account of epithelioma. The eyeball was healthy, and vision with it considerable, but it could not be saved. The patient was perfectly conscious when the nerve was divided, and was asked if he experienced any sensation of light, but replied in the negative. It is suggested that the supposed stimulation of the nerve on division was really a stimulation of the retina in consequence of the tension of the globe by its necessary fixation at the moment of division of the nerve. Another fact which has been advanced as proof that the optic nerve is sensitive to mechanical stimulation, is the sensation of light which may be produced by extreme lateral movements of the eyeball. It has been referred to the stretching of some of the fibres of the optic nerve. But Schmidt-Rimpler points out that the sensation thus produced is that of a circle of light with a dark centre, and that its apparent position corresponds nearly to the point of entrance of the optic nerves. It is difficult to conceive that the fibres which end near the disk have a course so separate trom others that they are only stimulated when the nerve is stretched. It is more probable that the phenomenon is due to extension of the sheath of the optic nerve, which pulls upon the selerotic around the entrance of the optic nerve, and so stimulates the retinal elements. The absence of reaction on division of the nerve does not, however, exclude altogether its mechanical sensibility, since other nerves, motor and sensory, which certainly possess this sensibility, may not react if quickly divided. That sensations of light may be produced by mechanical irritation of the nerve is shown by some observations made by Schmidt-Rimpler on persons from whom an eye had been removed not long before. A blunt instrument was pressed against that part of the orbit in which the stump of the nerve was situated. The observations were made in a room almost completely dark. Of six persons, in two pressure on this spot always caused a flash of light on the side of the enucleated eye. One of them averred that the sensation exactly resembled that which he had before experienced when the eyeball was galvanized. The same patients experienced a similar sensation when the stump of the nerve was galvanized. The negative result in other cases may be explained by more complete atrophy of the nerve, or greater retraction of the stump. These positive observations seem to establish conclusively the mechanical excitability of the optic nerve.—*Lancet*, Feb. 4, 1882.

"Alkapton" in Urine.

At the last meeting of the Medical Society of the King and Queen's College of Physicians in Ireland, Dr. GEORGE C. ARMSTRONG exhibited a specimen of the urine of a little girl, apparently in perfect health, whose mother he had attended three years ago in the worst puerperal convulsions he ever saw. The mother remarked that the child's urine, although perfectly normal in appearance when first passed, on being allowed to cool assumed a deep colour, and stained the child's linen. He sent some of the urine to Professor Tichborne, who had made the following analysis: "The specific gravity of this urine at 60° Fahr. was 1025. Albumen was absent. It was acid to test-paper, and on standing gave a slight deposit, consisting of urate of ammonia and a little mucus. The urea was scanty, and not sufficient to account for the high gravity—it was 1.2 per cent., or 5.25 grains per fluidounce This urine presented a great peculiarity; it contained a substance which is only met with occasionally, and which has been termed alkapton. Bödeker met with a case, and Lionel Beale mentions a case in which Dr. Johnson found it in the urine of an infant. This body stains the linen, particularly when the urine becomes alkaline. It behaves like sugar, and reduces copper, and probably it may be viewed in a somewhat similar light pathologically. Estimated as a sugar, it would give about eight grains to the fluidounce. The urine was examined for the bile reactions, but gave none." Dr. Armstrong said he put some of the urine into small bottles, and having hermetically sealed them, left one exposed to light and air, and put the other into a dark place. The latter specimen, after six hours, was not changed in any way.

The Vice-President (Dr. J. W. MOORE) said that, although this urine after a manner "behaved like sugar," as Dr. Tichborne's analysis stated, yet the reaction was very different. Under the influence of liquor potassæ, without the aid of heat, it struck a dark brown colour. Urine containing grape-sugar, according to his experience, did not change when liquor potassæ was added to it, except under the influence of heat. Again, with sulphate of copper the reaction of the urine was very incomplete—not at all so complete as that given by grape-sugar. The results of the microscopic examination of the deposit of the urine were completely negative; the deposit he experimented with consisted of a little mucus, epithelium, and a few small oil globules, the presence of which may have been accidental. Dr. Walter Smith tested, before the Society, samples kindly supplied to him, and pointed out that the results confirmed the statements originally made by Bödeker in reference to so-called "alkapton" in urine. These are —1. Strong alkalies darken the urine without the application of heat, and the coloration proceeds from the surface of the liquid downwards, *i. e.*, oxidation co-operates with the alkali. 2 Reduction, at least partially, of the copper test. 3. Non-fermentation with yeast. The term *alkapton* is, it is presumed, derived from *alkali* ἁπτω (fasten or bind), from its relation to alkalies; but the word conveys no real information, and was given at a time (1861) when the physiological chemistry of the urine was very imperfectly understood. From various considerations Dr. Smith thought it probable the peculiar substance or substances in the urine exhibited belonged to the "aromatic series" of chemical compounds, the physiological relations of which group have been investigated with remarkable success during the past five years. Pending further investigation it would be premature to express a definite opinion on the subject in question.—*Med. Times and Gazette*, January 21, 1882.

The Formation of Bone.

The well-known experiments of SYME in Scotland and of OLLIER and DUHAMEL across the Channel long ago demonstrated the power of the periosteum in forming new bone. Ever since these demonstrations it has been a question whether the periosteum is the sole agent in forming the ossifying callus in cases of fracture; also whether the lymph in the medullary canal is formed *in situ*, or is forced in from without through the fissures in the bone (as maintained by Lebert and Maas).